

CLAIMS

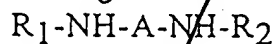
1. A process for the preparation of cross-linked polysaccharides containing carboxy groups, comprising:

- a) activation of the carboxy groups of the polysaccharide by reaction with suitable carboxy activating groups in anhydrous aprotic solvent;
- b) reaction of the carboxy activated polysaccharide with a polyamine.

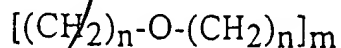
2. A process according to claim 1, wherein the polysaccharide is selected from Hyaluronic acids (obtained from tissues or bacteria), carboxymethyldextran, carboxymethylcellulose, carboxymethylstarch, alginic acids, cellulosic acid, N-carboxy-methyl or butyl glucans or chitosans; heparins with different molecular weights, optionally desulphated and succinylated, dermatan sulphates, chondroitin sulphates, heparan sulphates, polyacrylic acids. *not a polysacch! obj.*

3. A process according to claim 1 or 2, wherein the carboxy activating agent is selected from carbonyldiimidazole, carbonyltriazole, chloromethylpyridylum iodide (CMP-J), hydroxybenzotriazole, p-nitrophenol p-nitrophenyltrifluoroacetate, N-hydroxysuccinimide.

4. A process according to any one of claims 1 to 3, wherein the polyamines have the following general formula:



wherein  $R_1$  and  $R_2$ , which are the same or different, are hydrogen,  $C_1$ - $C_6$  alkyl, phenyl or benzyl groups, A is a  $C_2$ - $C_{10}$  alkylene chain, preferably a  $C_2$ - $C_6$  alkylene chain, optionally substituted by hydroxy, carboxy, halogen, alkoxy, amino groups; a polyoxyalkylene chain of formula



wherein  $n$  is 2 or 3 and  $m$  is an integer from 2 to 10; a  $C_5$ - $C_7$  cycloalkyl group; an aryl or hetaryl group, preferably 1,3 or 1,4-disubstituted benzene.

5. A process according to any one of claims 1 to 4, wherein the

Sub  
a<sub>1</sub>

polysaccharide is salified with lipophilic cations.

→ 6. A process according to claim 5, wherein the lipophilic cation is tributyl or tetralkyl ammonium.

Sub  
a<sub>2</sub>

7. A process according to any one of claims 1 to 6, wherein the cross-linking reaction is carried out in anhydrous dimethylformamide or tetrahydrofuran.

8. A process according to any one of claims 1 to 7, wherein the obtained cross-linked polysaccharide is further subjected to sulfation of the hydroxy groups by reaction with the pyridine/sulfur trioxide complex.

reg 10

→ 9. A process according to claim 8, wherein the sulfation reaction is carried out in dimethylformamide in heterogeneous phase at 0-10°C for times from about 0.5 to about 6 hours.

Sub  
a<sub>3</sub>

10. A process according to any one of claims 1 to 9, wherein the cross-linked, optionally sulfated polysaccharide, is further subjected to complexation reaction with aqueous solutions of copper, zinc or iron ions.

11. Cross-linked polysaccharides obtainable by the process of claims 1 to 10.